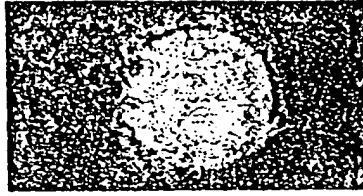


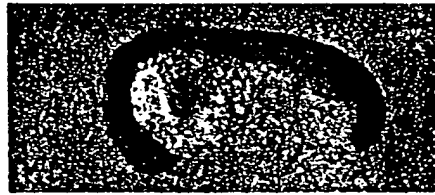
Figure 1

2(A)



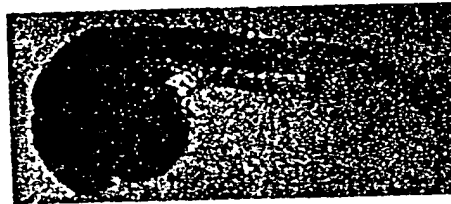
12 hpf

2(B)



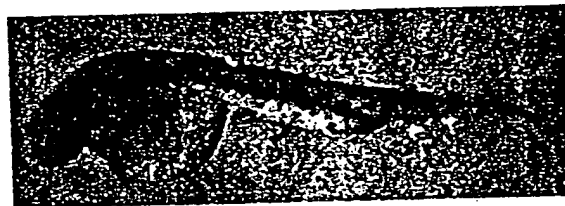
16 hpf

2(C)



24 hpf

2(D)



48 hpf

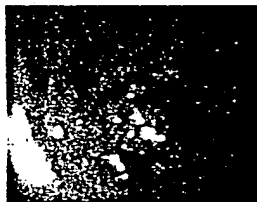
Figure 2 (A)-(D)

3(A)



H3 Antibody 24f

3(B)



upf Acridine Orange

Figure 3 (A)-(B)

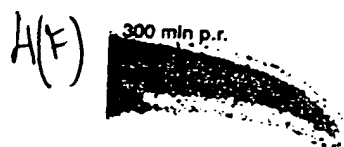
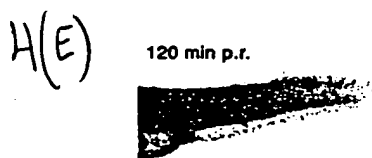
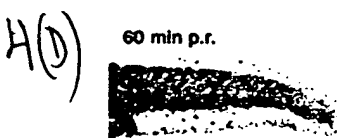
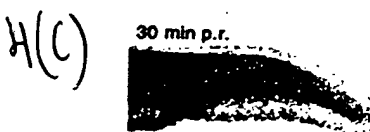
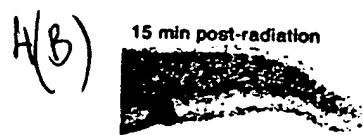
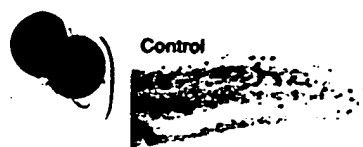


Figure 4 (A)-(F)

5

**A**

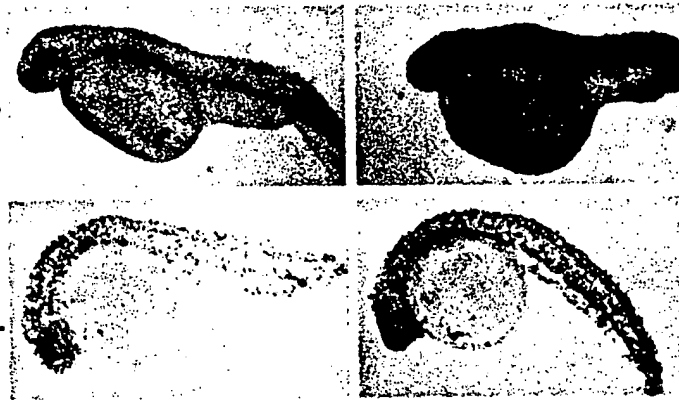
Wild type

SQW 226

Mutant

Haploid

Diploid

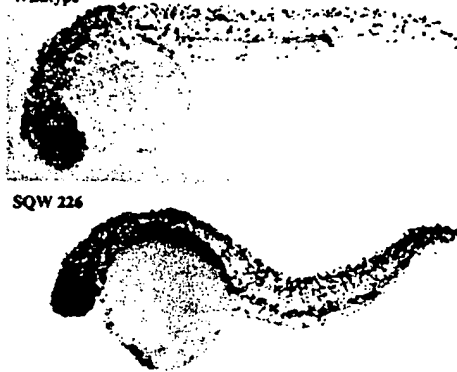


5

**B**

Wildtype

SQW 226



5

**C**

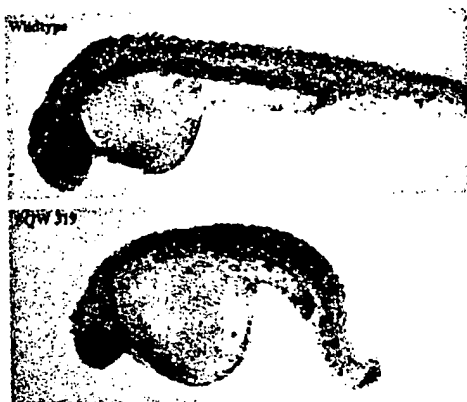
Wildtype

SQW 213

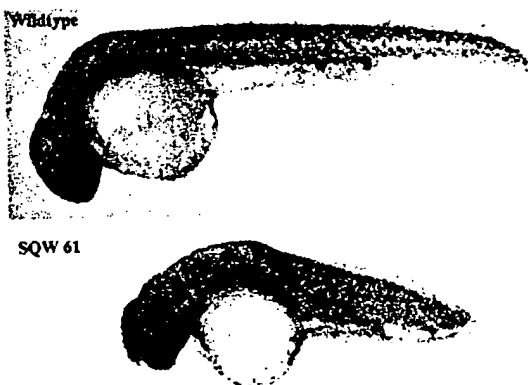


Figure 5 (A)-(C)

5 D



5 E



5 F

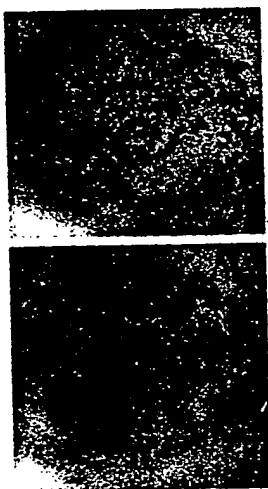
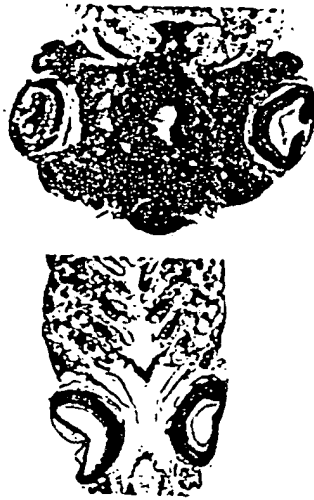
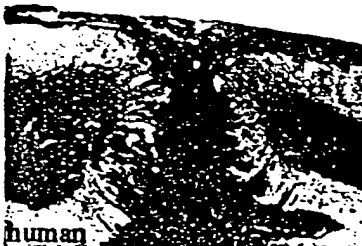


Figure 5 (D)-(F)

A



B



human

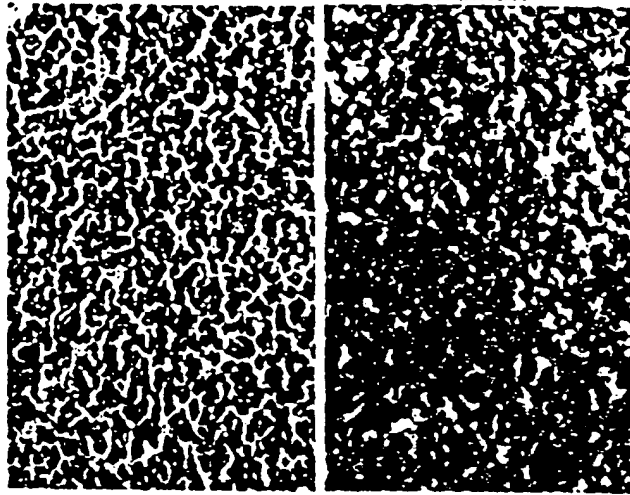
Figure 6 (A)-(B)

6

C

Zebrafish

Human



6

D

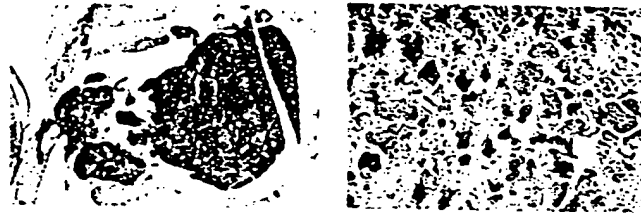


Figure 6 (C)-(D)



6 E

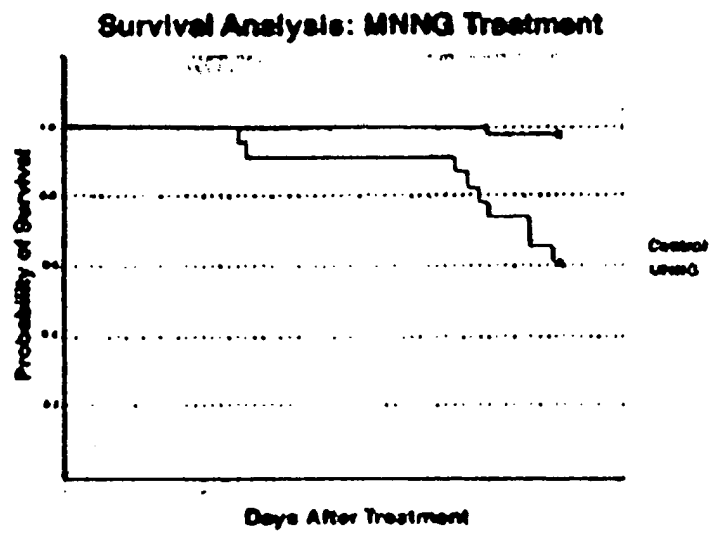
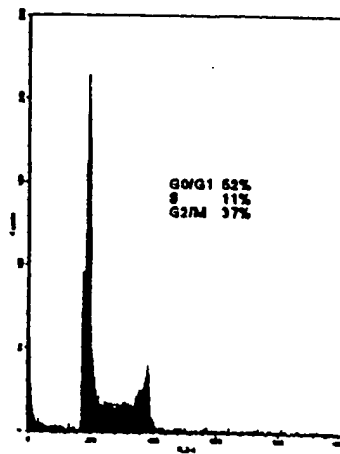


Figure 6 (E)

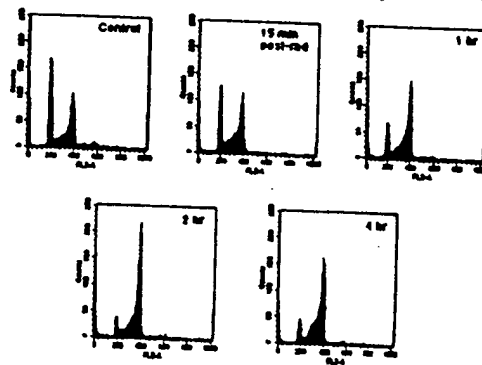
**A**

**Single-Embryo FACS Analysis**

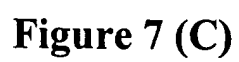


**B**

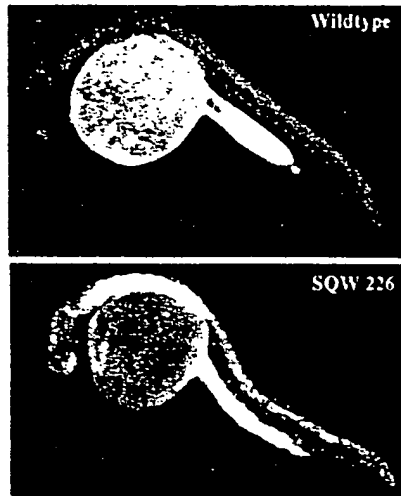
**FACS Analysis of Embryos after Ionizing Radiation**



**Figure 7 (A)-(B)**

[illegible]

8 A



8 B

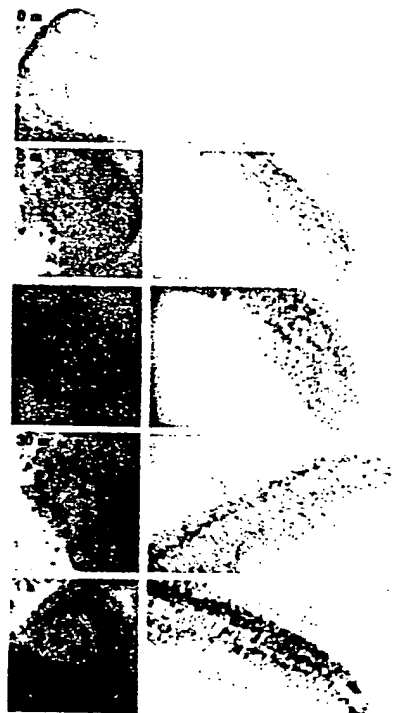
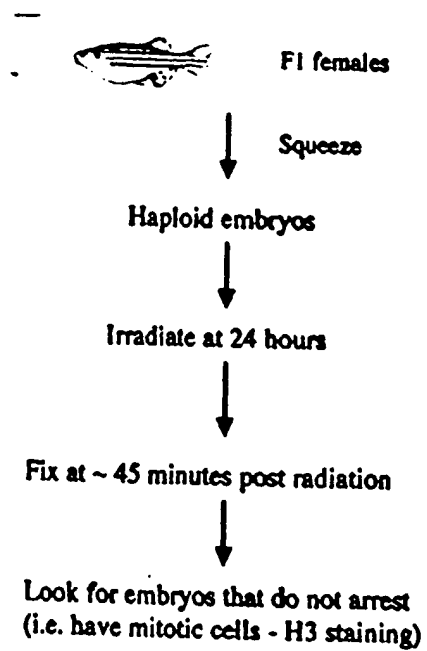


Figure 8 (A)-(B)

8 C

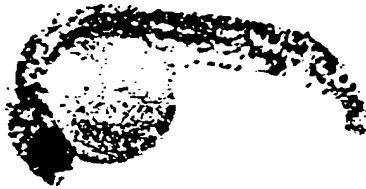


Figure 8 (C)



**Figure 9**

WT  
non-irradiated



WT  
irradiated



SQW 226  
irradiated



Figure 10

Zfish MPPK--CRSSGTQCKELKSLKSRSPSCGN-----AVLSPERHKKKDEVFISEECSTNSICOMWRDNER 68  
 Frog MPPKSPK---QQEPSCGEPSPCRP-----OFQDQPIFLCENKISCHVRCKAWNTYEX 53  
 Human MPPKTPKXTAATAAAAAEPPAPPCPPPPPEECPECCSGPEOLPLVRLFEETEEETALCCCKPCCHVREAWLTKEX 80

Zfish EIRSNCK-TNMPYSHQCCGALFIAQHELEGINLITFQFLKAVGLSKQFISLVKXIVMYOTSPUNSVNTPLENY 147  
 Frog MFPSGYMRE-TAXKXESLQLLTIASVOCEENTFITTELLKILRLSVNRCFRULRENTMCHVSNQCMNISKLKCY 132  
 Human VSSVQGVLCGYEQKKELNIGITFIAVCLDENSFITTELOQNIETISVHKFFMLKEET-----STQCMNSPLKCY 155

Zfish OVTLAIYQRFVXIGCKLFAEPMA-----KRXELWESSITMFLAKGTFLCEQDVISFLLCVLEFAKRLSPSL 220  
 Frog ENMCLIFCKFCRIFFLFECHMT---RAAVDTAPILXGTITITFLARXILQDQELVISFLLCVLOYFLILSPSI 209  
 Human OVLFAILFSKLERIGLILYLTQPS-SISTEINSALVLKVSITITFLAKCEVLQEDLVISFLLCVLOYFLILSPSL 234

Zfish LQSPINSVSSSTLSPPTSTSPKQCKSKPR--PAEMDQLLETLCKEGQSVDBQVYQSTCAFLDSVGLLGLOGL 298  
 Frog ILKEPYKSAINGLPVNTPPSSSISQNRNTRYSPQSTISKVLFLCSQNYQPMDBPVYISTSVOLJASAGISSNECIS 289  
 Human ILKEPYKTAV--EPINGSPTPIPCQNRSAIAKQLENTRIEVLCKEHEQNDDBQVYFKLIFVNSLGLVTSKGL 312

Zfish PMBALSKQYEELTHSKQDARLFLSCDETLSPNKIEVSKYEVTPRNLFADOLAPMOTFLAATSTQRLGGLTSG 378  
 Frog KVESISQYEELTHSKQDARLFLSCDETLKVDQCSLOLERIPRKO--ESEVPVPPQIPVCAANTVQQLNLTSSA 367  
 Human EVENLSKPYEELTHSKQDARLFLSCDETLQDSTIOSFETQTPRRSMLDEEVNVLPPHPTATANTQQLNLTSSA 392

Zfish SDQSSNMLVYXKCTQDSGELKVEELGEVFIQREQAVCOHGEQLRKAFYLAQLYKAVESMLKSEERLSVQ 458  
 Frog NOKSPOTLOSINFSPCTVWPKTITDISHFGVMEKEGESSVCCGACAEIQYQYKLVGLYRVEALIKTEERLSVH 447  
 Human SDQSSNMLVYXKCTQDSGELKVEELGEVFIQREQAVCOHGEQLRKAFYLAQLYKAVESMLKSEERLSVQ 472

Zfish FSKLLNAAFTSLACALVWLTIVGSSLKNGGFGPSSGASQSVESOLCFPHILSVFQLPDPYKVIKSPKAEPTL 538  
 Frog FSKLLNDBFHLCLACALVWLTIVGSSLKNGGFGPSSGASQSVESOLCFPHILSVFQLPDPYKVIKSPKAEPTL 518  
 Human FSKLLNDBFHLCLACALVWLTIVGSSLKNGGFGPSSGASQSVESOLCFPHILSVFQLPDPYKVIKSPKAEPTL 542

Zfish KXOYVHLECECEVIMESLAPADSPLFDILKQRE-EGPGECAEPPTANQPLMHHTAADLYSPVSPCRQ----- 510  
 Frog TSNIMMLERCECEVIMESLAPADSPLFDILKQRE-EGPGECAEPPTANQPLMHHTAADLYSPVSPCRQ----- 598  
 Human TRSYVHLECECEVIMESLAPADSPLFDILKQRE-EGPGECAEPPTANQPLMHHTAADLYSPVSPCRQ----- 622

Zfish --P-PYMELEPTP--GTRAPSSLSLFYKMYRLAYLRUKMIFSNLITSHPEEPDITLCTILOEYELMRERHLD 685  
 Frog TSSVTNGQVSSSQPVQ---QKSTLSLFYKMYRLAYLRUKMIFSNLITSHPEEPDITLCTILOEYELMRERHLD 674  
 Human NST-ANAETCATSAFQTCPLKSTLSLFYKMYRLAYLRUKMIFSNLITSHPEEPDITLCTILOEYELMRERHLD 701

Zfish QLESAITATGMKIMVLPFTINTAYHELPNTNQETFARVLTREGQYOSIVFYHIFROKUNTILOYSSPFPPLSF 765  
 Frog QIMVCSITATGMKIMVLPFTINTAYHELPNTNQETFARVLTREGQYOSIVFYHIFROKUNTILOYSSPFPPLSF 754  
 Human QIMVCSITATGMKIMVLPFTINTAYHELPNTNQETFARVLTREGQYOSIVFYHIFROKUNTILOYSSPFPPLSF 781

Zfish IPHIPCSFYK--MSPLMPGSMWVSPFLSSPV-----SPLVITPSRIILSISGESEGSACQETNGVSSSONSL 837  
 Frog IPHIPSPYRFGNSP-KMPC--NIVVSPLYTPYXTADGLLSPSKITPXTSFLISLGTSPSPQFTHGLNSCERPT 831  
 Human IPHIPSPYKFPSSPLRIPCH-IVISFLSPYXI SEGLPDTKIPPSAILVSIIGSEGTSEKTHGLVNSORVLE 860

Zfish RSLGGGSAPKPLKLRFDQCGDEADGSKS-SGESALQKLAESSSTFSVQEQKKEESCKXHP 904  
 Frog RSDTGTTPKPLKLRFDQCGDEADGSKHIGGESXFCQKLAESTSTIRVOCKLEESLESSQEEK 899  
 Human RSEGSNPKPLKLRFDIEGDEADGSKMLPGESXFCQKLAESTSTIRVOCKNOSNOTSNKEEK 928

904 SEQ ID NO: 1  
 899 SEQ ID NO: 2  
 928 SEQ ID NO: 3

Figure 11



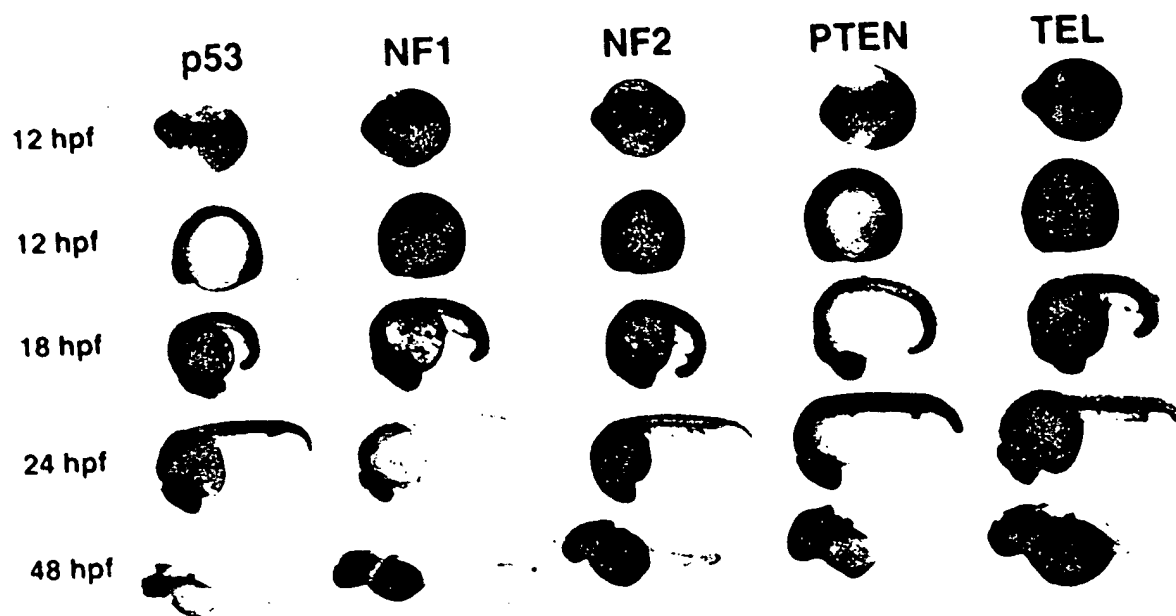


Figure 12

13A



13B



13C

SQW 213

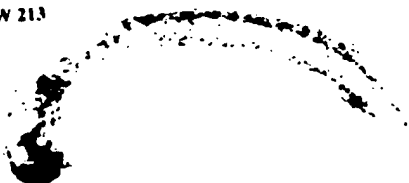
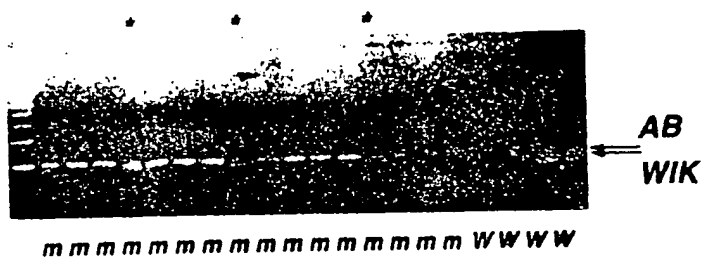


Figure 13 (A)-(C)

[illegible]

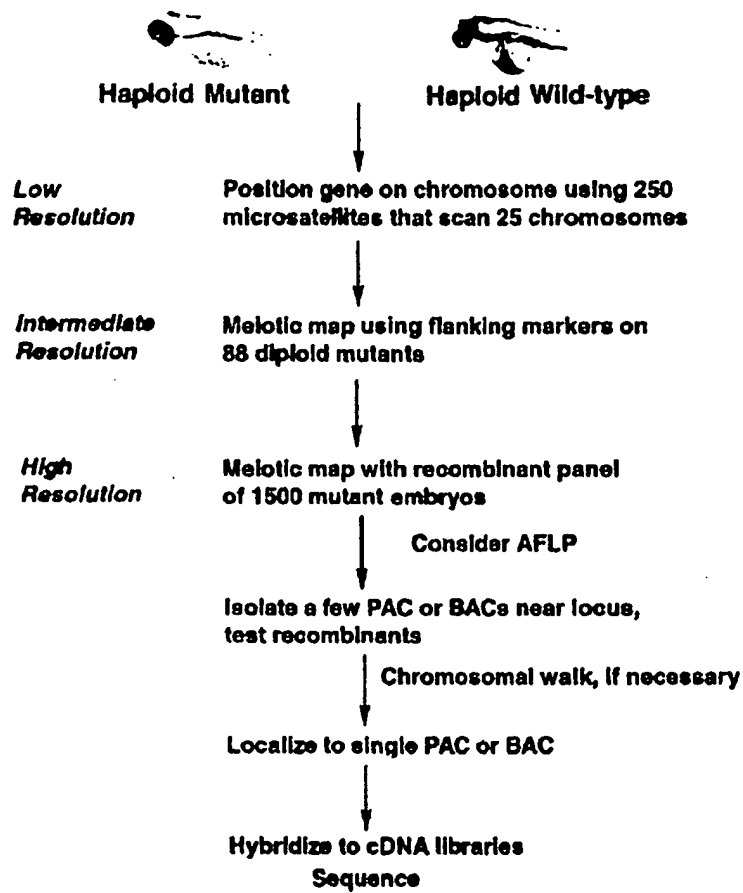
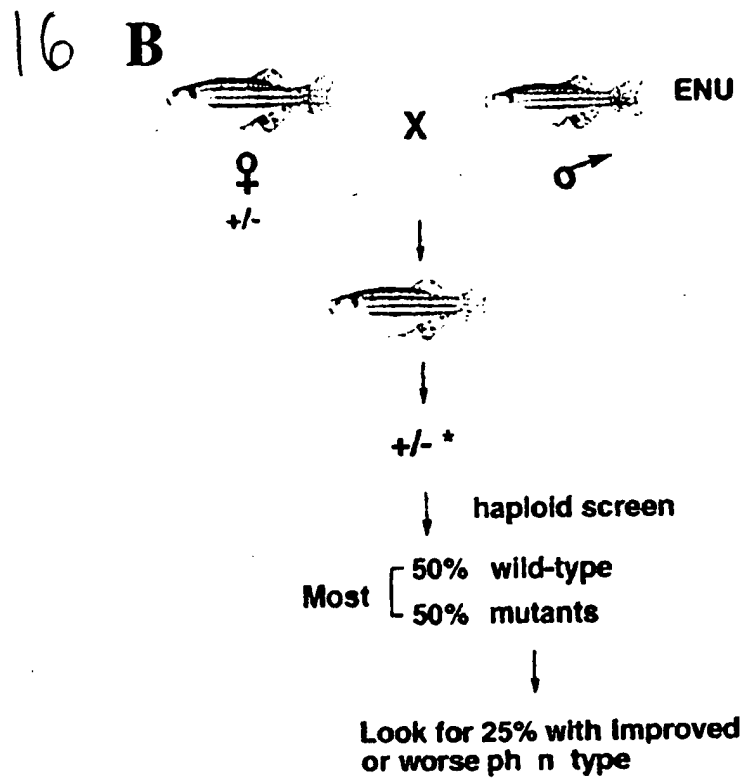
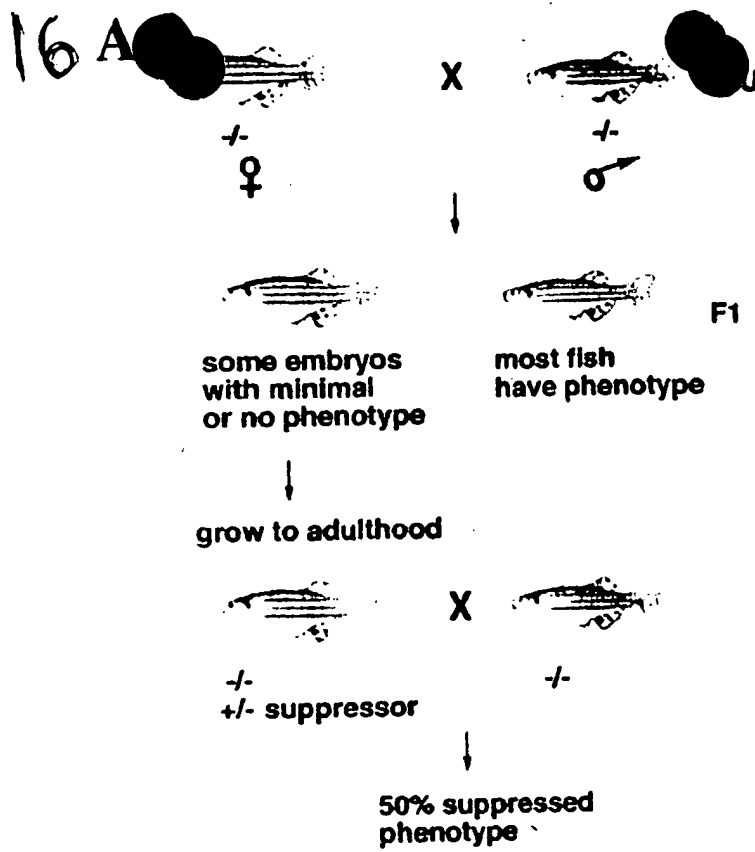
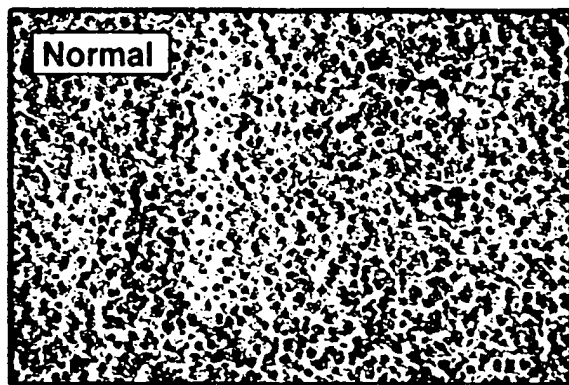


Figure 15

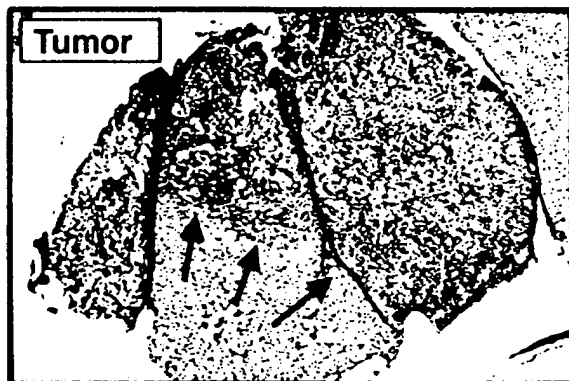


Figures 16 (A)-(B)

17 A



17 B



17 C

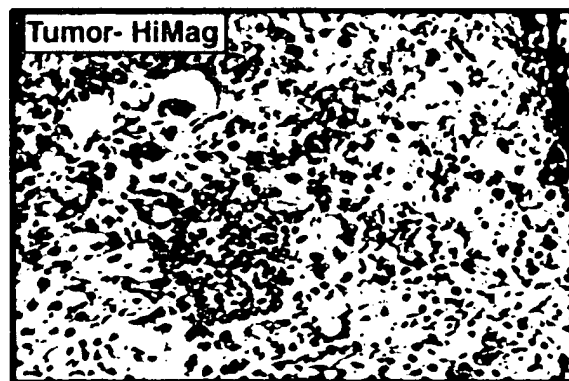
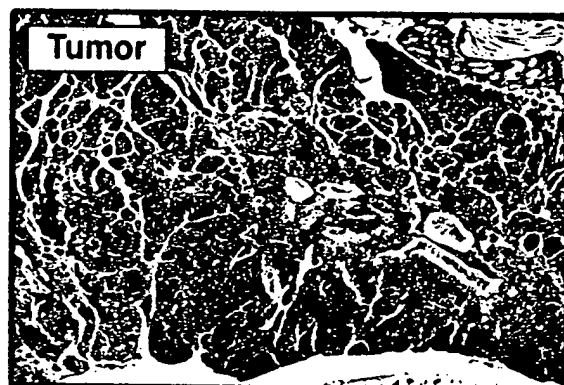


Figure 17 (A)-(C)

18 A



18 B

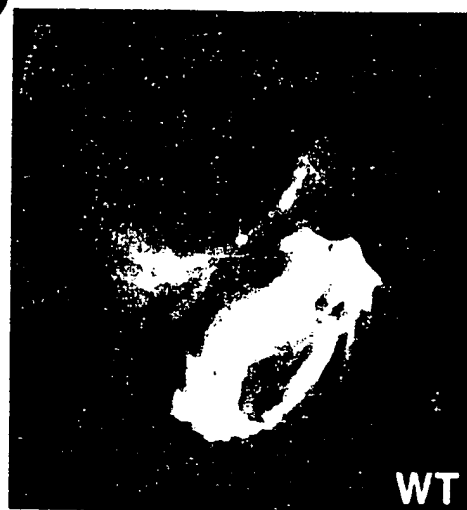


18 C



Figure 18 (A)-(C)

19 A



19 B



19 C

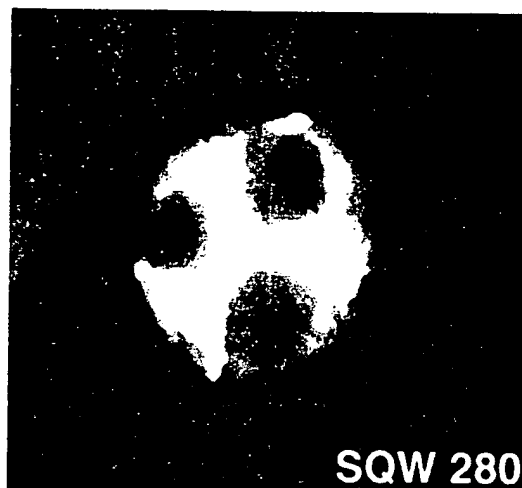
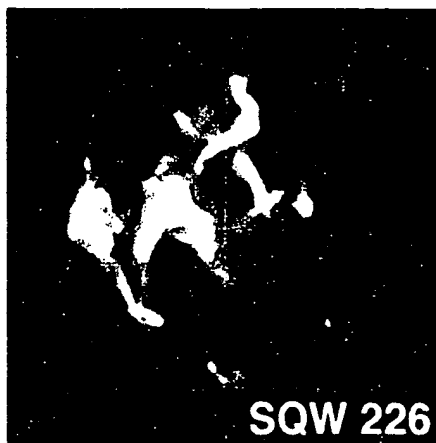


Figure 19 (A)-(C)



19 D



19 E

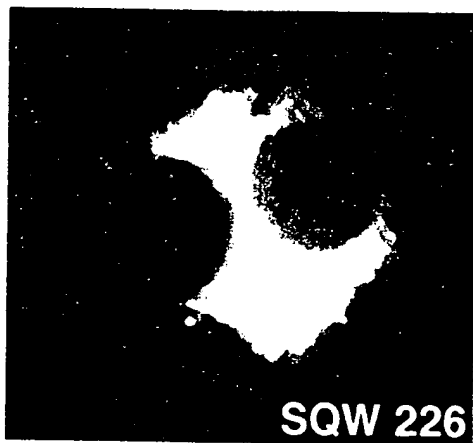


Figure 19 (D)-(E)

20

A

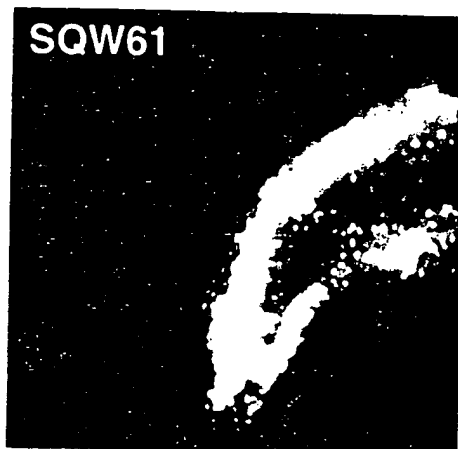
WT



20

B

SQW61



20

C

SQW213

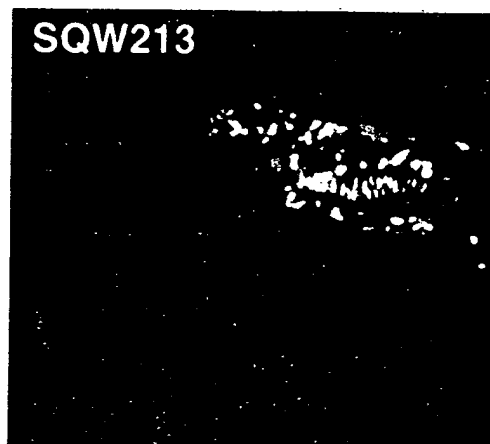


Figure 20 (A)-(C)

20

D

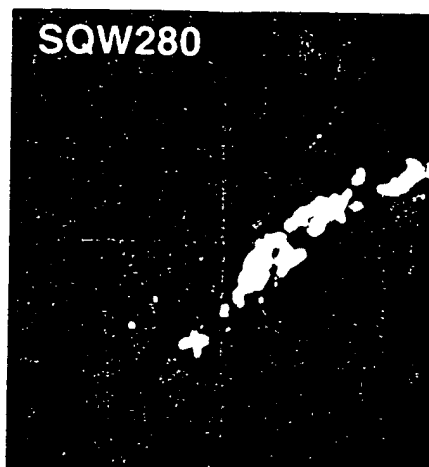
SQW226



20

E

SQW280



20

F

SQW319



Figure 20 (D)-(F)

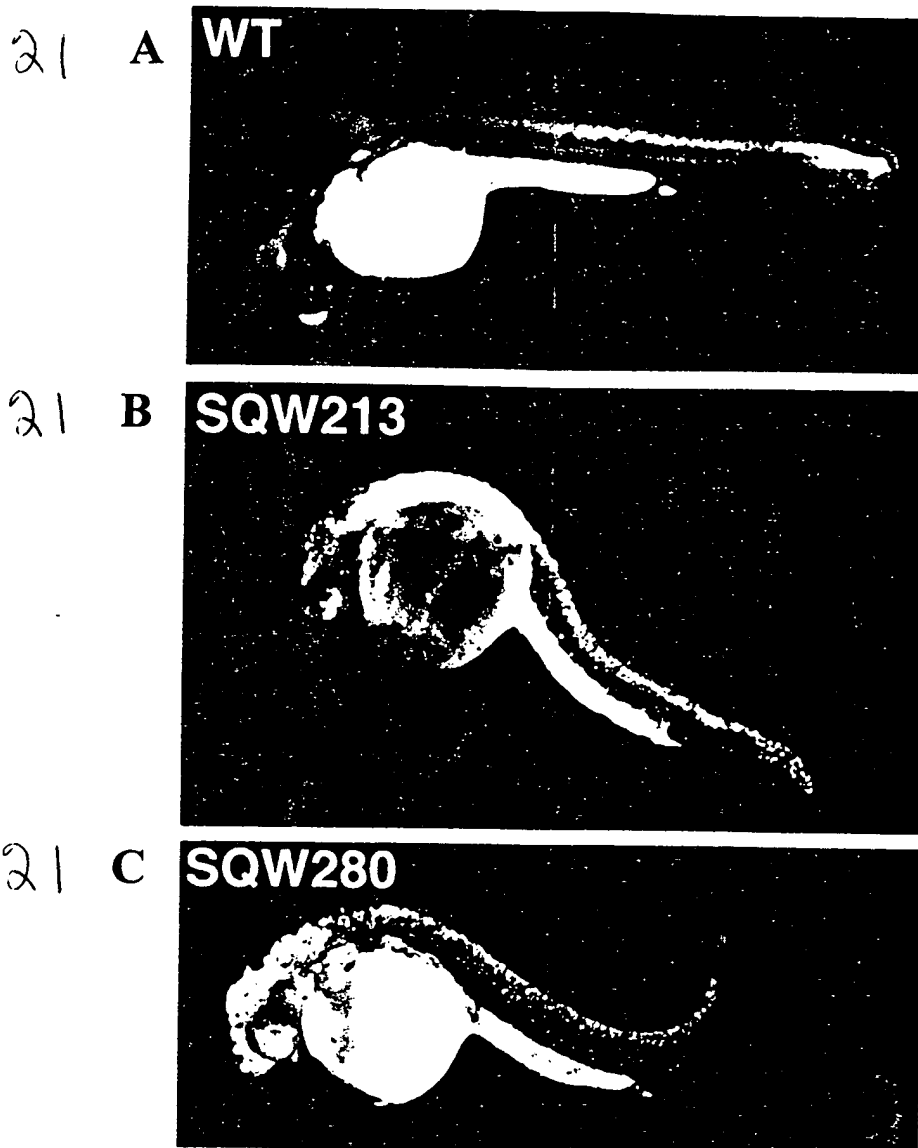
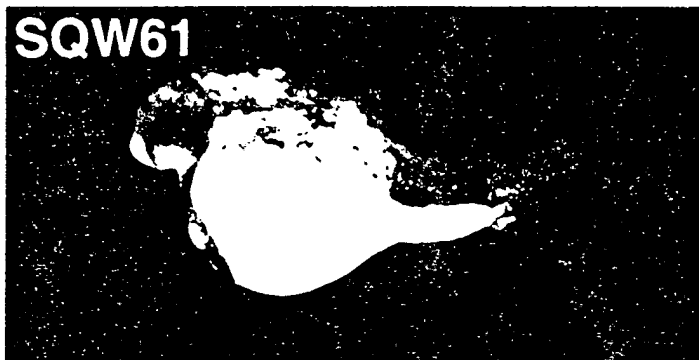


Figure 21 (A)-(C)

21 D



21 E



21 F



**Figure 21 (D)-(F)**